Splinter Session Instructions

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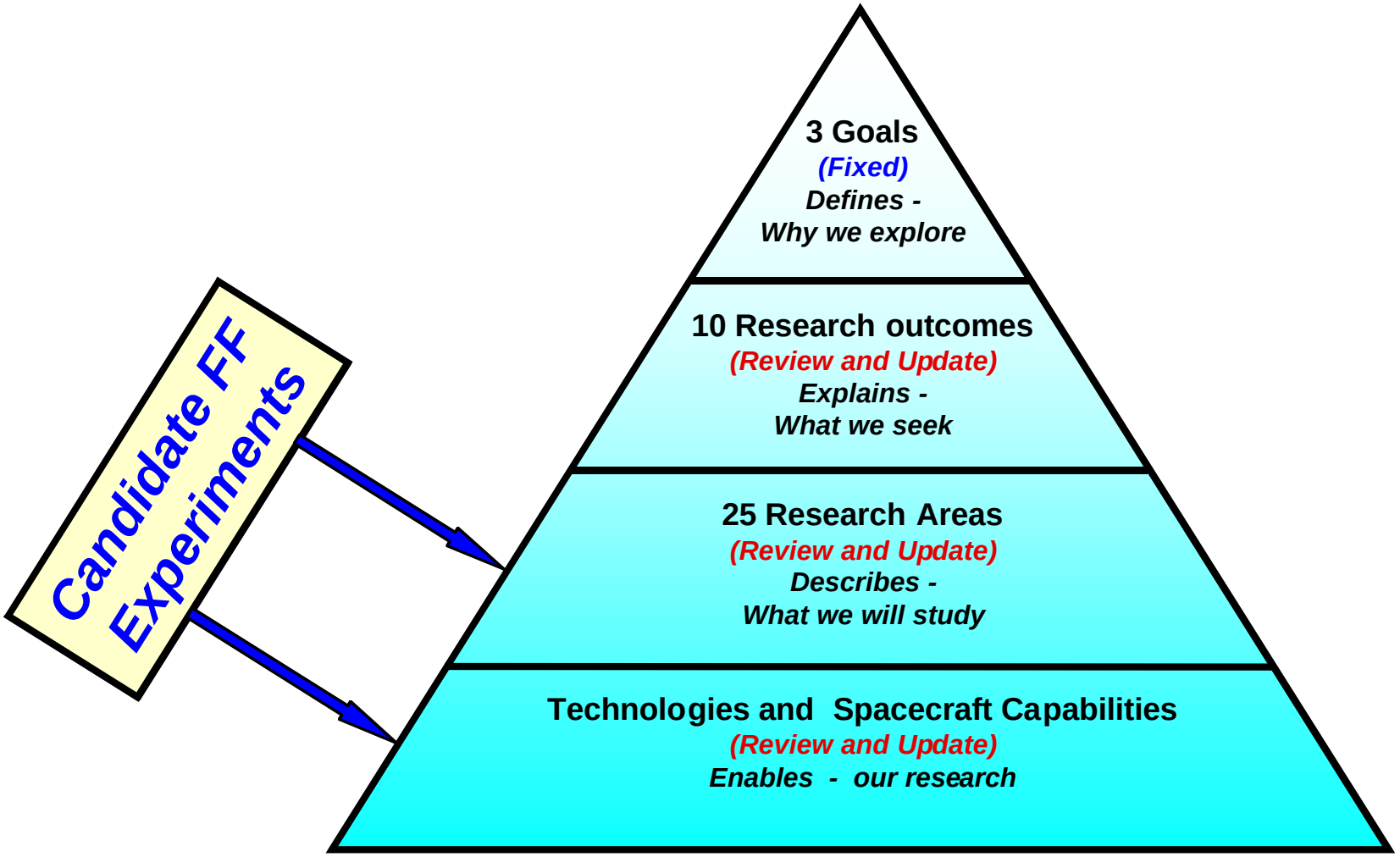
Roadmap update process



Roadmap Update Process

Day 1 splinter sessions

- ***Break into splinter groups representing each of the three Research Goals***
- ***Establish ~ three Research Outcomes that are uniquely achievable on the FF and that supports the attainment of the goal***
  - ***Add, subtract, modify Research Outcomes from Roadmap Draft***
- ***Establish ~ two - three Research Areas that encompass the FF experiments envisioned for each Research Outcome.***
  - ***Add, subtract, modify Research Areas from Roadmap draft***
- ***Make absolutely sure that extended capabilities of FF are required***
  - ***Long Duration sub-micro-gravity environment***
  - ***Vastly extended orbit selection including access to radiation environments beyond the Van Allen belts***
  - ***Use of hazardous species, materials, and techniques***
  - ***On-demand launch and return***
- ***Determine the technology required to pursue each Research area.***
  - ***Add, subtract, modify Roadmap draft***
- ***Iterate as required to achieve a self-consistent set***
- ***Update matrices***

* *Refers to OBPR Goals, p.6*

Roadmap Update Process

Day 2 splinter sessions

- ***Break into splinter groups representing each of the three Research Goals***
- ***Determine the Spacecraft Capabilities required to pursue each Research area.***
  - ***Add, subtract, modify Roadmap draft***
- ***Iterate as required to achieve a self-consistent set***
- ***Update matrices***

* *Refers to OBPR Goals, p.6*

Goal B: Expand our knowledge of the Physical World

Free Flyer Justification

Free Flyer Capability ---->	Microgravity requirement beyond ISS capability	Orbit requirement beyond ISS capability	Use of Hazardous species, materials, or techniques	On-demand launch and/or return required
Research Outcome 1: Discover New Knowledge at the Frontier of Physics				
Research Area 1: Determine if Einstein was right	●	●		
Research Area 2: Search for new physics beyond the Standard Model	●	●		
Research Area 3: Learn how complexity evolve in nature	●			
Research Outcome 2: Develop predictive principles for hazardous processes				
Research Area 4: Study violent combustion effects safely			●	
Research Area 5: Study volatile cryogenic systems safely			●	
Research Outcome 3: Determine physical properties of the Space Environment				
Research Area 6: Map radiation environment beyond the Van Allen Belts		●		
Research Area 7: Map vacuum and magnetic environment beyond VA belts		●		

Goal B: Expand our knowledge of the Physical World

Candidate Experiment Input Sheet

Research Outcome B1: **Discover New Knowledge at the Frontier of Physics** Research Area: **Determine if Einstein was right**			
Representative Experiment:	**Exp1:**	**Exp2:**	**Exp3:**
Summary Description of Science			
Rationale for FF versus ISS, SS, rocket, or ground:			
Key Instrument Technology 1			
Key Instrument Technology 2			
Key Instrument Technology 3			
Key Instrument Technology 4			
Mission Duration (months)			
Microgravity requirement vs freq.			
Orbit description			
Mass (kg) / Volume m3)			
Power (W)			
Data Requirements			
Special spacecraft needs (return, late access, pressurized, hazards, etc.) Why?			

Goal B: Expand our knowledge of the Physical World

Key Enabling Technologies

	Quantum Limited Sensors	Precise frequency standards	Cryogenic Dewars	Lasers and Optics	Light Scattering Technology	Combustion Chamber	Vibration Isolation	High Resolution Video	Environment Detectors							
Research Outcome 1: Discover New Knowledge at the Frontier of Physics																
Research Area 1: Determine if Einstein was right	●	●	●	●			●		●							
Research Area 2: Search for new physics beyond the Standard Model	●		●	●			●		●							
Research Area 3: Learn how complexity evolve in nature	●		●	●	●			●	●							
Research Outcome 2: Develop predictive principles for hazardous processes																
Research Area 4: Study violent combustion effects safely					●	●		●								
Research Area 5: Study volatile cryogenic systems safely					●			●								
Research Outcome 3: Determine physical properties of the Space Environment																
Research Area 6: Map radiation environment beyond the Van Allen Belts									●							
Research Area 7: Map vacuum and magnetic environment beyond VA belts									●							

Goal B: Expand our knowledge of the Physical World

Key Spacecraft Capabilities

	Mission life requirement (months)	Microgravity DC requirement	Microgravity Vibration requirement	Orbit Requirements	Mass (Kg)	Volume (m3)	Power (W)	Data requirements (Command, Telemetry, Recording)	Thermal Requirements	Special spacecraft requirements (return, late access, pressurized, hazardous operations).
Research Outcome 1: Discover New Knowledge at the Frontier of Physics										
Research Area 1: Determine if Einstein was right	6 - 12									
Research Area 2: Search for new physics beyond the Standard Model	6 - 12									
Research Area 3: Learn how complexity evolve in nature	3 - 6									
Research Outcome 2: Develop predictive principles for hazardous processes										
Research Area 4: Study violent combustion effects safely	1 - 3									
Research Area 5: Study volatile cryogenic systems safely	1 - 3									
Research Outcome 3: Determine physical properties of the Space Environment										
Research Area 6: Map radiation environment beyond the Van Allen Belts	1 - 3									
Research Area 7: Map vacuum and magnetic environment beyond VA belts	1 - 3									